Spray Dried Porcine Plasma Improves Weaner Pig Resilience to Enteric Challenge

Jos Houdijk[1], Louis van Deun[2] and Carine van Vuure[2]
[1]SAC, West Mains Road, Edinburgh, EH9 3JG, Scotland
[2]SONAC, Son and Breugel, Netherlands
Email: Jos.Houdijk@sac.ac.uk

Background

- Spray dried porcine plasma, a food grade slaughterhouse by product, is used as protein source in weaner pig diets in many countries.
- Several studies suggest spray dried porcine plasma may improve gut health.

Aim

To assess effects of spray-dried porcine plasma on weaner pig resilience and acute phase proteins during sub-clinical post weaning colibacilossis.

Materials and Methods

- Two rounds, each with 16 pens of 4 pigs (2 ♂ and 2 ♀), weaned at 9.4±0.1 kg and 28.7±0.5 day of age.
- Test diets (16.9 MJ DE; 16.7 g lysine):
  - **Milk**: Dry skimmed milk powder 5%
  - **Plasma:** Spray-dried porcine plasma 5%
- Challenge (feed mixture with phosphate buffered saline for 5 days from day 4 post weaning):
  - **Sham**: PBS only
  - **ETEC**: PBS with 10^8 cfu ETEC per pig per day
- Experimental design:
  - 2 x 2 factorial (n=8 pens) for 14 days post weaning.
  - Standard diets for further 21 days.

Results 1: Resilience

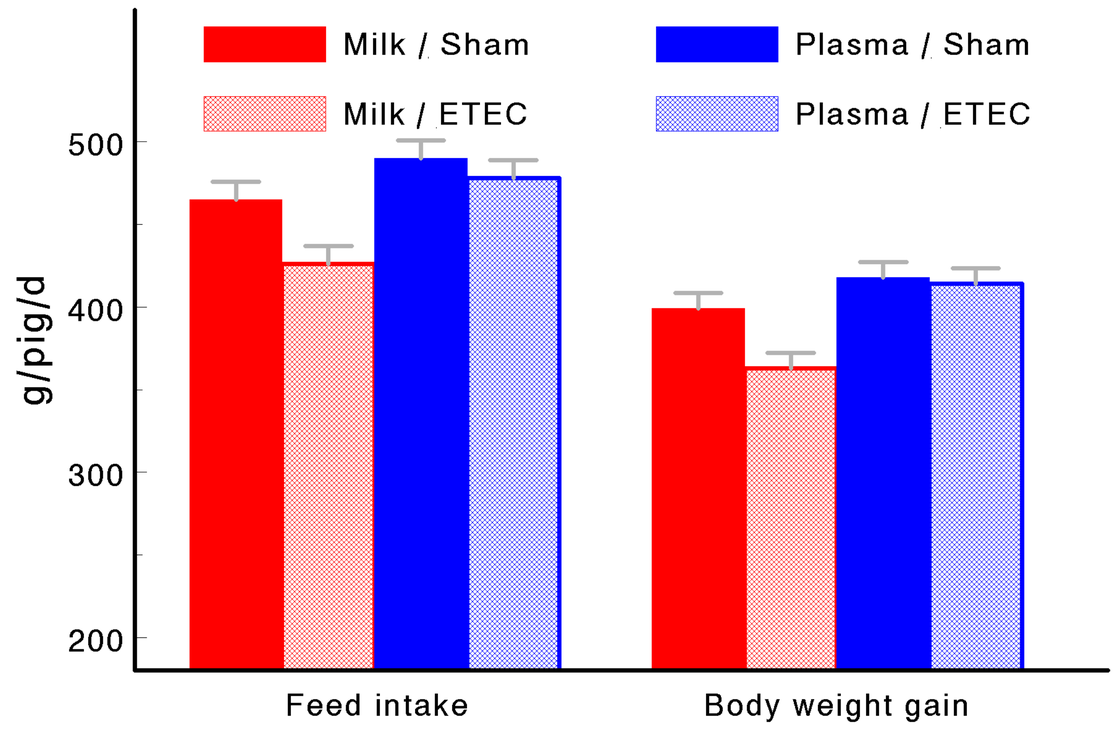
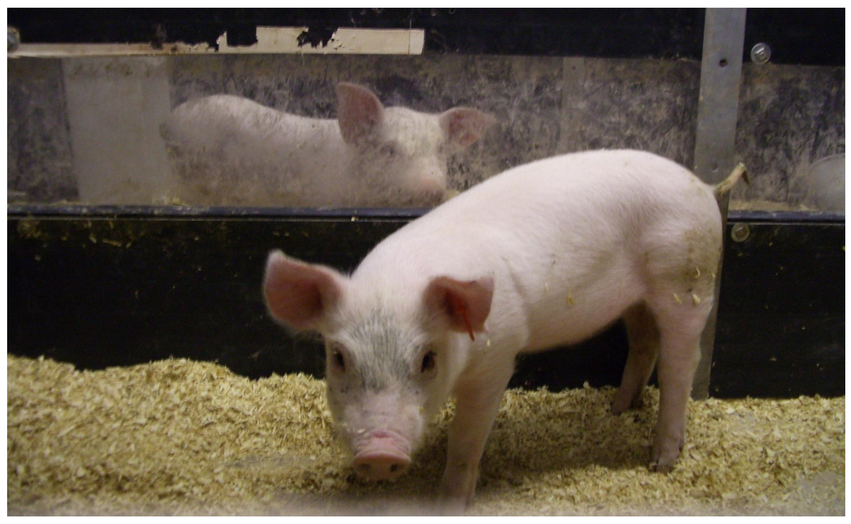


Figure 1: Pig performance over the first 14 days post weaning

- Plasma increased weaner pig feed intake and weight gain (P<0.001), the latter especially in presence of challenge (P=0.093; Figure 1) without significantly affecting feed conversion ratio (P>0.10).
- Plasma pigs continue to have higher intakes than milk pigs on standard diets (+5%; P=0.004) without significantly affecting feed conversion ratio (P>0.10).



Results 2: Acute Phase Proteins

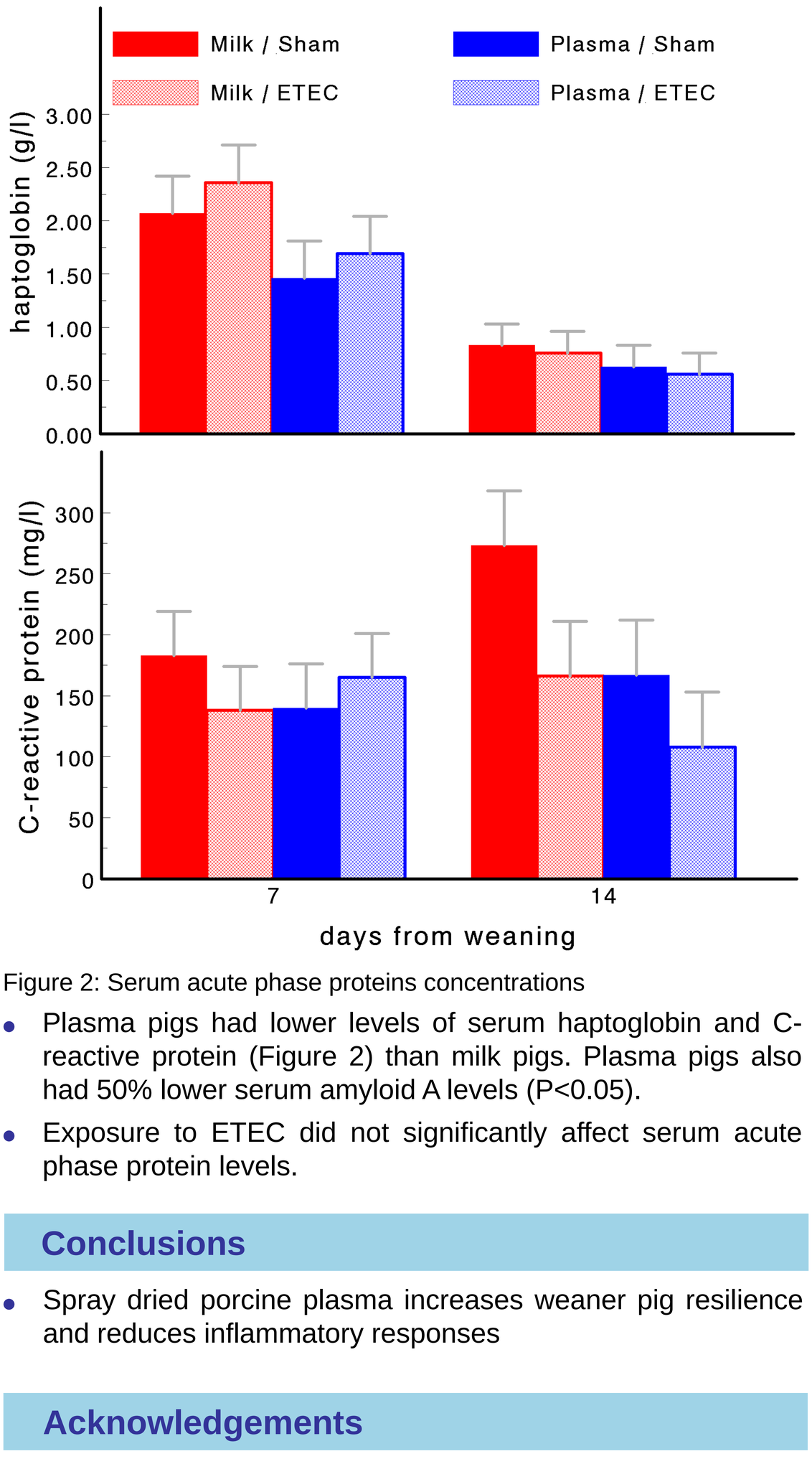


Figure 2: Serum acute phase proteins concentrations

- Plasma pigs had lower levels of serum haptoglobin and C-reactive protein (Figure 2) than milk pigs. Plasma pigs also had 50% lower serum amyloid A levels (P<0.05).
- Exposure to ETEC did not significantly affect serum acute phase protein levels.

Conclusions

- Spray dried porcine plasma increases weaner pig resilience and reduces inflammatory responses

Acknowledgements

Technical assistance: Dave Anderson, Sandra Terry, Kirsty Hughes, Frankie Alcock, Lorraine Henderson and Brian Murray

Funding: SONAC